We Claim:

1. A method for modulating mechanoreception or mechanosensation in a mammal comprising administering to said mammal an effective amount of VR-OAC polypeptide, or active fragments or portions thereof.

2. The method of Claim 1 wherein said VR-OAC polypeptide comprises the sequence set out in any of SEQ ID NOS: 2, 4, 8 or 9.

3. The method of Claim 1 wherein said active fragment or portion of VR-OAC polypeptide comprises the sequence set not in any of SEQ ID NOS: 5, 6, or 7.

4. A method for treating a condition characterized by altered mechanoreception or mechanosensation in a mammal comprising administering to said mammal an effective amount of VR-OAC polypeptide, or active fragments or portions thereof, wherein said VR-OAC polypeptide comprises the sequence set out in any of SEQ ID NOS: 2, 4, 8 or 9.

5. The method of Claim 4, wherein said active fragment or portion of VR-OAC polypeptide comprises the sequence set out in any of SEQ ID NOS: 5, 6 or 7.

6. The method of Claim 4, wherein said condition characterized by altered mechanoreception or mechanosensation is selected from hearing disorders, vertigo of labyrinthine origin including motion sickness, Meniere disease, neurological disorders (including ataxia due to alterations of afferent input to the CNS, and paraesthesia), male infertility, immune dysfunction with alterations of antigen presentation (including HIV infection), obesity and diabetes mellitus, chronic obstructive lung disorder, bronchial asthma,

sexual dysfunction due to sensory deficits, blindness due to corneal or retinal causes, and skin disorders (including psoriasis, pemphigus vulgaris and other forms of pemphigoids, pruritus, allergic skin diseases).

7. A method for modulating mechanoreception or mechanosensation in a mammal comprising introducing to said mammal a nucleic acid vector capable of expressing an effective amount of VR-OAC polypeptide, or active fragments or portions thereof, wherein said VR-OAC polypeptide comprises the amino sequence set out in any of SEQ ID NOS: 2, 4, 8 or 9.

8. The method of claim 7 wherein said active fragment or portion of VR-OAC polypeptide comprises the sequence set not in any of SEQ ID NOS: 5, 6, or 7.

9. A method for determining whether a subject is suffering from altered mechanoreception or mechanosensation comprising determining the expression of VR-OAC polypeptide or ribonucleic acid capable of encoding VR-OAC polypeptide.

10. The method of claim 9 comprising the steps of:

a) contacting a sample from a subject for which altered mechanoreception or mechanosensation is suspected with an antibody to the VR-OAC polypeptide under conditions that allow binding of the VR-OAC polypeptide to the antibody to occur; and

b) detecting whether binding has occurred between the VR-OAC from the sample and the antibody;

wherein the detection of binding indicates that presence or activity of the VR-OAC polypeptide in the sample.

11. A method of screening for modulators of mechanoreception or mechanosensation comprising the steps of:

a) contacting a sample in the presence of a candidate modulator with an antibody to the VR-OAC polypeptide under conditions that allow binding of the VR-OAC polypeptide to the antibody to occur; and

b) detecting whether binding has occurred between the VR-OAC from the sample and the antibody;

wherein the detection of binding indicates that presence or activity of the VR-OAC polypeptide in the sample.

12. A method of screening for modulators of mechanoreception or mechanosensation comprising the steps of:

a) contacting a *C. elegans* osm-9 mutant which expresses VR-OAC polypeptide with a candidate modulator; and

b) assessing the activity of VR-OAC in the presence of said modulator by determining nose touch sensitivity and/or osmotic avoidance in said *C. elegans* mutant.

13. A biosensor or nanotechnological device, which comprises as one of its components the VR-OAC polypeptide or active fragments or portions thereof.

14. The biosensor or technological device of claim 13 wherein said VR-OAC polypeptide or active fragments or portions thereof comprises the amino acid sequence set out in any of SEQ ID NOS: 2, 4, 5, 6, 7, 8 or 9.